Talking Points/Questions for NRC re Point Beach Nuclear Plant's amended EIS NUREG-1437, Supplement 23,18, Second Draft Report for Comment (5/28/25)

The relicensing of Point Beach Nuclear (PBN) reactors was paused due to various lawsuits. A decision on these lawsuits, issued on February 24, 2022, determined that the Nuclear Regulatory Commission (NRC) require power stations seeking license renewals, from 60 to 80 years of operation, to undergo review under the National Environmental Policy Act (NEPA). As a result, the NRC recently released a revised Environmental Impact Statement (EIS), which is now open for public comment.

Physicians for Social Responsibility Wisconsin (PSR WI) began challenging the license renewal for the PBN reactors in January 2021. We requested a hearing and petitioned for leave to intervene, asserting our interest in the outcome of the proceeding. Although the four contentions submitted by our expert witnesses were deemed inadmissible, PSR WI did establish legal standing. Ten individuals within a 50-mile radius of the PBN reactors provided testimony, expressing concern that radioactive releases could harm their health, damage their property, and cause lasting environmental harm in the event of an accident.

Below are additional details concerning the risks of relicensing the Point Beach nuclear reactors for operation:

Climate Change

The Draft EIS presented for our comment includes some updated weather data about climate change, but there appears to be little evidence that the best climate change projections for 2030 through 2055 and beyond are rigorously being explored and considered. The more voices that ask the Nuclear Regulatory Commission to do the right thing, the more likely it is that they might move that way.

The past two decades have shown us that climate change, defined as weather patterns with greater volatility and greater extremes, is well underway. Weather events more regularly have greater extremes of intensity and volume, so our reference points need to be the recent past records as the basis for future projections. Data from 1895 is a curiosity but not a good indicator of current and future conditions at Point Beach.

More frequent, more extreme weather events challenge many aspects of the Point Beach site stability, building stability, and operational and safety capacities of this complex industrial facility built on the shore of Lake Michigan.

This EIS must include a thorough and comprehensive review of the climate parameters expected from 2030 until 2053 for reactor operation, and decades beyond for storage of high-level nuclear waste on-site.

This EIS needs to be forward-looking, using the most current knowledge to craft projections of the future. It needs to acknowledge that the actual future conditions are unknown, so that uncertainty calls for additional caution and margins of safety.

To say that climate change is out of scope when considering the operation and safety of the two nuclear reactors at Point Beach seems preposterous. There is no margin for error here; this EIS must take a hard look at all conceivable potential circumstances and how they could impact public health and safety from the operation of Point Beach. This facility was designed and built in the late 1960s and early 1970s, with its initial safety certifications reflecting conditions of that time. Now, some 55 years later, a fresh and contemporary assessment is required to ensure that relicensing is a safe and sound course of action, considering the expected future conditions impacted by climate change.

The following are important questions regarding climate change:

- Are all aspects of this complex facility designed, built, and maintained sufficiently to withstand damage or disruption from plausible future extreme weather events?
- With intensity and volume of rainfall increasing, is on-site water management adequate to handle even the most extreme imaginable conditions, able to avoid flooding and operational disruption?
- Literally and figuratively, are the gutters and downspouts big enough and the drainage pathway(s) sufficient to avoid any erosion or disruption to the site stability and safe operation of two nuclear reactors?

Derecho storms, defined as a line of intense, widespread, and fast-moving windstorms and sometimes thunderstorms that move across a great distance and are characterized by powerful straight-line damaging winds, need to be assessed and protected.

In addition, in 2013, Lake Michigan recorded a record low water level; in 2020, just seven years later, it recorded a record high water level. This demonstrates the volatility and extremes of climate change that must be considered in this EIS.

Important questions include:

- How would such a storm potentially erode the shoreline?
- How would it damage buildings and electrical structures?
- How would it impact the essential convection cooling pathways needed for safe maintenance of the high-level nuclear waste dry cask storage containers lined up outside on concrete pads?
- How much higher and lower might these levels be over the next three or four decades, and how would those new extremes impact site stability, operational capacity, and safety?

Each of the above-mentioned climate change-enhanced weather events, and others, needs to be fully considered individually, and in various combinations and permutations.

Embrittlement

Nuclear reactors were designed and licensed to operate for 40 years. As they age, we can expect increased accidents due to equipment failures (Smith, 2006). Reactor pressure vessels

are thick steel containers that hold nuclear fuel and serve as a barrier to keep radioactive material out of the environment (U.S Nuclear Regulatory Commission, 2020). Nuclear reactors generate subatomic particles, which hit the steel and reduce the steel's ability to withstand cracking and the stresses of operation. This is "embrittlement" and the Point Beach reactor 2 is one of the most embrittled reactors in the U.S. due to its age and materials, making it vulnerable to cracking and the release of radiation in the event of an accident (Cockburn, 2022). The Nuclear Regulatory Commission estimated that the Point Beach 2 reactor was to reach its "embrittlement screening limit" by 2017 (Zipp, 2019).

To determine the progress of embrittlement, coupons, or metal samples were placed in the reactors before operation. Because of the 40-year reactor design, there are not enough coupons in the reactor core to test for embrittlement, let alone for the license extension request for 80 years to operate PBN. The NRC has repeatedly modified its calculations to allow aging, embrittled reactors to continue to operate. Without the physical samples, the NRC calculational approach has no scientific basis.

The following are questions you may ask related to the problem of embrittlement:

- Given that the Point Beach reactor 2 is one of the most embrittled reactors in U.S., (8 years beyond its embrittlement screening limit) and vulnerable to Pressurized Thermal Shock (PTS) in the event of a power mishap when cool water is injected into the reactor vessel to cool the reactor core to prevent a meltdown, why doesn't the NRC require testing of the coupons before relicensing?
- When were the coupons from the reactor last tested, and what were the findings?
- Will the NRC reject a renewal of the operating license based on the degree of embrittlement?
- How has the NRC determined that embrittlement is not a problem, considering that Point Beach Reactor 2 was identified as one of the most embrittled reactors in the country in 2013? Why don't they measure the coupon versus computer modeling?
- Does the risk of increased cancer prevalence, the billions of dollars in property damage for those living around Point Beach, and the contamination of the drinking water for millions of people factor into the decision to renew the license in the event of an accidental cracking of the reactor vessel and release of radiation into the environment?

Health

Examining potential effects of radiation on the communities, particularly those on PBN workers and living within 10 miles of PBN, we should consider the following issues:

<u>Reference Man</u>

Reports of radiation risks to health continue to be based on Reference Man (white, 70 kg, 20-30 year old male) when well-researched data indicates that women, fetuses, infants, children, and teens are affected at lower radiation doses than men (Healthy from the Start, n.d.). Populations surrounding PBN should have answers to the following:

- Why are the risks of radiation exposure to women, fetuses, infants, children, and teens not considered?

Tritium Discharges and Potential Leaks

All nuclear plants, including PBNP's units I and 2, release Tritium, a radioisotope of Hydrogen or H-3. This updated EIS reports that Tritium releases into water through monitoring of onsite wells and effluent at PBN have been below the current EPA drinking water standard of 20,000 picocuries/liter for Tritium.

There was a significant leak of Tritium at the 54-year-old (similar age to PBN units 1 and 2) Monticello Nuclear Plant located on the Mississippi River in the fall/winter of 2022-23. Elevated levels of Tritium were identified in monitoring wells close to the Mississippi River, with concerns that this radiation would contaminate the Minneapolis Water Works Reservoir 37 miles downstream from Monticello NPP, potentially contaminating the Twin Cities' drinking water.

The drinking water standard of 20,000 picocuries/liter for Tritium was recommended in 1960 by the Federal Radiation Council based on extrapolation from measurements of radionuclides in water supplies contaminated by fallout from nuclear weapons testing, but it was not based on a rigorous analysis of health risk. Federal expert guidance (EPA's FGR 11) suggests a more health-protective standard based on health risks to women and children and scientific advancements should be 400 picocuries/liter (Makhijani et al., 2007).

The following are questions of concern regarding Tritium risks:

- Where is Tritium measured in air (locations of monitors on the PBN site)?
- Where is Tritium measured in water (both locations of monitoring wells and from water released after cooling into Lake Michigan) from PBN's 2 units?
- How often are these samples retrieved and analyzed?
- What laboratory does the analysis of these samples?
- Where are they reported and made available to the public?

Microbiological Hazards to the Public

The latest EIS document discusses two thermophilic (or bacteria/amoeba that are present in water at high temperatures) organisms that potentially could affect human health: an amoeba, Naegleria fowleri (N. fowleri), and cyanobacteria (commonly known as blue-green algae). Both risks are considered SMALL in the document. However, the following should be considered:

- *N. fowleri Amoebic Encephalitis:* A rare brain infection, but identified twice in Minnesota lakes, which has a 97% mortality rate (Boutros-Khoury & Kudlac, 2023).
- *Blue-Green Algae (Cyanobacteria):* There have been increased reports of cyanobacteria in Lake Superior and elsewhere in Lake Michigan (Wisconsin Department of Natural

Resources, n.d.). Cyanobacteria were documented in August 2024 in Muskegon County, MI, just north and west of Palisades Nuclear Plant, across the lake from PBNP (Michigan departments of Environment, Great Lakes, and Energy (EGLE); and Health and Human Services (MDHHS), n.d.). These cyanobacteria blooms and amoeba-like N. fowleri incidents increase as water temperatures increase.

- *Water Temperature:* Annual Lake Michigan surface temperatures are projected to increase by 1.28–2.56°F (in 2030) and 1.92–3.24°F (in 2049) (United States Nuclear Regulatory Commission, 2025).

Questions of concern include:

- Is the NRC concerned that projected increases in Lake Michigan ambient temperatures due to climate change and continued thermal effluents will increase the risk for cyanobacteria and N. fowleri for populations recreating nearby?
- How often is the temperature of the thermal effluent discharge from Point Beach Nuclear (now approx. 915+ million gallons/day at temperatures up to 24.3 degrees F hotter than ambient lake temperatures) measured, and where is this information released to the public?
- In addition to the risks to humans, if increasing lake temperature promotes the presence of blue-green algae blooms and N. fowleri, will these harmful thermophilic organisms also threaten the health and life of lake mammals, reptiles, water fowl, and shore birds?

Nuclear Waste

There is no safe, permanent solution anywhere in the world for the nuclear waste problem. The waste now held at 121 sites across the U.S. costs taxpayers $800 million/year, because the US government failed to open a geological repository by the legislated year of 1998 (Vidal, 2019). Currently, all radioactive waste generated by U.S. reactors is stored at the reactor site, either in fuel pools or waste casks. The casks are vulnerable and should be “hardened” until a better solution is found (Beyond Nuclear, n.d.). Any repository must be safeguarded for tens of thousands of years, and if anything goes wrong, future generations risk profound widespread pollution. Additional background information includes:

- PBN generated 965 metric tons of waste between 1970 and 2017; by 2033, an estimated 1,242 metric tons of waste will be in dry cask storage at PBN.
- The byproducts of nuclear reactors remain radioactive for tens of thousands of years.
- This waste contains highly poisonous chemicals like plutonium and uranium pellets and poses a threat to agriculture, water sources, and all living things.
- Nuclear reactors and waste disposal sites are not built to withstand war. Note the recent drone attack on the new safe containment structure of the damaged Chernobyl nuclear plant site on February 14, 2025, in Ukraine.

The following are questions you may ask related to the problem of nuclear waste:

- What plans does Point Beach have to safeguard the nuclear waste at its reactor site?

- Are the dry casks monitored for radiation leaks and cracking and protected from flooding? What are the procedures for repairing them?
- Why doesn't NextEra implement hardened onsite storage (HOSS) for greater protection of the dry casks?
- Point Beach states they have 5 days of backup power in case of an outage. Where are the backup generators located? How are they safeguarded?

One Health of the Environment for Surrounding PBN Communities:

One Health is the collaborative effort of multiple disciplines to attain optimal health for people, animals, and the environment. The One Health concept arose from the realization that human, animal, and environmental health are inextricably linked and that a holistic approach is needed to understand, protect, and promote the health of all species.

One Health seeks to improve communication and encourage collaboration between veterinarians, physicians, environmental scientists, public health professionals, and others to find multidisciplinary solutions to shared challenges such as emerging infectious diseases, antibiotic resistance, and emergency preparedness (Global Health Institute, University of Wisconsin-Madison, n.d).

Of concern for the relicensing of PBN are the following:

<u>Effects on the One Health Environment:</u>
This includes climate change effects (temperature and precipitation changes) on endangered species stressed by the marked loss of insect populations (from habitat loss, pesticides such as neonicotinoids, and invasive species) (Fox, 2021).

This subsequent license renewal states that for federally listed, endangered, or threatened species, the PBN continued operations “may affect, but is not likely to adversely affect, northern long-eared bat, tricolored bat, piping plover, and monarch butterfly” (United States Nuclear Regulatory Commission, 2025).

Questions of concern for this topic include:

- How will impacts to federally listed, endangered, and threatened species be monitored, and what contingency plans are in place to preserve their habitat?
- How much more water will be needed to cool PBN as ambient water temperatures increase with climate change?

Utility Costs and Emergency Response

For rate-paying customers of WE Energies and WPPI, avoiding a comprehensive look at energy burdens for ratepayers receiving energy from nuclear power generation in comparison to lower energy costs per kilowatt hour from renewable energy sources (wind and solar) is NOT in the public interest. Specific issues are described below:

Energy Rates

See our previous expert testimony in 2021 by Mark Cooper, PhD, on expected increases in energy costs predicted for ratepayers if PBN's two units are relicensed to continue to produce energy for 60-80 years (Cooper, 2021). He concludes that costs for ratepayers will be more than $5 billion (when licensing ends for one PNB unit) by 2030, compared to energy costs from NRC-offered alternatives to nuclear power, or about $300 more per year per household.

Tribal Impact

This exemption also avoids looking at how PBN continued operation for an additional 20 years may negatively affect fishing, hunting, and gathering federal rights for Wisconsin's tribal nations in legally ceded territories compared to the effects on these same treaty rights with electricity created from alternative renewable energy sources (Wisconsin Public Radio, n.d).

Although this updated EIS was sent to WI Tribal Chairs, it was not sent to the Great Lakes Inter-Tribal Council, and especially to their health, research, and education, and their epidemiologic center, the Great Lakes Indigenous Health, Research & Education Center (GLITEC). PSR WI recommends that this SLR should be officially reviewed by the native nations' health and environment government entities. Regarding tribal impact, a suggested question is:

- Why is the impact on legally ceded territories not considered in the revised EIS?

Emergency Response Capacity

Manitowoc and Kewaunee counties vary in their preparedness for a nuclear-related emergency. Manitowoc County includes an active link to NextEra resources in its emergency management website, while Kewaunee County does not (Manitowoc County WI, n.d.).

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